

**COCHLEAR IMPLANTS WITH A STIMULUS IN THE HUMAN  
ULTRASONIC RANGE AND METHOD FOR STIMULATING A COCHLEA**

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**ABSTRACT**

10 A cochlear implant system for a patient's cochlea includes an external processor and  
an implanted internal unit. The internal unit includes one electrode for inserting in the  
patient's cochlea, and an internal coil for driving the electrode. The external processor  
includes a microphone for outputting electrical sound signals in response to ambient or other  
sounds, an oscillator for generating an electrical analog carrier signal, and a modulator for  
modulating the carrier signal with the sound signals to generate a modulated signal. An  
external coil couples magnetically the modulated signal to the internal coil. The analog  
carrier signal has a frequency in the ultrasonic human range, i.e. greater than 20 kHz, such as  
15 32 kHz or 80 kHz. This sampling at higher frequency results in clearer rendering of sounds,  
and a higher frequency range of rendered sounds.